Empowering Eight Through a Web-Based Repository System in Improving Student Research Performance

Raden Kania[*1], Nur Hidayanti[2], Tifani Intan Solihati[3], Achmad Bisri[4], Roza Marmay[5], Edy Rakhmat[6]

[1] Computerized Accounting, Banten Jaya University, Indonesia 42171
e-mail: [1]kania@unbaja.ac.id

[2,3,6] Informatics Engineering, Banten Jaya University, Indonesia 42171
e-mail: [2]tifaniintansolihati@unbaja.ac.id , [3]nurhidayanti@unbaja.ac.id, [6]edyrakhmat@unbaja.ac.id

[4]Informatics Engineering, Pamulang University, Indonesia 15417
e-mail: achmadbisri@unpam.ac.id

[5]Agro Industry Logistics Management, Politeknik ATI Padang 25171
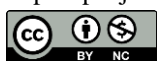e-mail: rozamarmay@poltekati.ac.id

Abstract

The Banten Jaya University Library repository system still used the conventional method of storing it on a shelf in the reference room, this made it difficult for students who were completing their final project/thesis to access it online. Moreover, with the closure of the campus due to the COVID-19 pandemic, the PSBB and PPKM were continued. This research made it easier for students to access library repository collections wherever they are, measure the extent of students' literacy skills in utilizing information sources, and show the impact on their research performance. The data collection method uses a questionnaire, with statistical analysis, a model for assessing student literacy skills with Empowering 8, which were a research method used to produce products and test the effectiveness of these products, with the Waterfall system development model, which consists of analysis, design, implementation, and testing. Metadata obtained from the repository application, distributing questionnaires to students taking Thesis/Final Project courses from each faculty. The literacy level of Banten Jaya University students is quite good, especially after the online repository has been built, there is a significant correlation between student literacy levels and student performance results. A good literacy level was the basic capital in solving student problems while doing their research, it is necessary to have a Research Information Literacy program for students that is integrated with Research Methods courses so that student research performance increases in accessing the repository that has been built.

Keywords: empowering eight, repository, research performance, students

1. Introduction

Banten Jaya University Library currently does not have a system repository that can be accessed online. The library still applies an electronic repository system where users (lecturers and students) can access various types of research results from lecturers and students in the library's Reference Room. This makes it more difficult for users who have limited time to be able to take advantage of the collection service. The library member registration information system, user service, and ongoing report data storage system are still done traditionally by filling out forms on paper and saving scientific work report data, if the user has finished filling out the form, the library must enter the data back into the library. Excel application on PC. In other words, library services are not optimal. Based on previous research, the

existence of a web-based library repository system is expected to provide convenience for officers in managing library information systems and make it easier for users to access the information they need.

The author is also interested in seeing the extent to which the application of this web-based online repository will be able to boost student research performance later by looking at the level of student literacy skills on their research performance. The repository highlighted by the author is about various data and information on research results/scientific works of students and lecturers, both in the form of Thesis, Real Work Practice Reports, Proposal Reports, Internal and External Scientific Journals on campus as well as various proceedings presented in various national and international scientific seminars international. The method used is descriptive qualitative with a The Waterfall system development model comprises of analysis, design, implementation, and testing. The construction of this web-based library information system utilizes PHP 7 programming language for effective system functions to build web-based applications. It is hoped that this study can enrich the research potential in the field of computer science in particular, and in the fields of education, libraries and student research performance. It is hoped that this study will be able to provide positive input for institutions to develop various programs that can stimulate research in the campus environment.
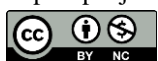
Literatur Review

Table 1. Literature Review Table

No	Article Title	Author	Problem	Method	Results
1	Evaluation of Institutional Repositories Using Self-Evaluation Tool For Documenting Best Practices In Institutional Repositories (Case Study at O. Notohamidjojo Library)	Wiwil, Tintien Koerniawati, Elizabeth Sri Lestari (WIWIL, TINTIEN KOERNIAWATI, 2021)	Have never evaluated the management of institutional repositories either by using evaluation tools or not using them.	Qualitative descriptive approach case study	The results of the evaluation research on the governance and organizational aspects of the organizational structure of the SWCU institutional repository are under the management of the O. Notohamidjojo Library.
2	Knowledge Management System (KMS) in Improving Higher Education LPPM Innovation	Endang Retnonongsih (Retnoningsih, 2013).	The competitiveness of higher education institutions tends to decline, thus threatening the superior position and sustainability of the universities concerned.	Literature study, bibliometrics	In higher education, the determination of quality is always a very important effort, because the quality of performance often determines the survival of a university.
3	Web-Based Library Repository at Banten Jaya University (case study)	Raden Kania, Rustam Effendi, Muh. Rizal Sidik (R Kania et al., 2021)	Libraries find it difficult to organize collections of student scientific works, reference collections are still conventional, the PSBB PPKM covid-19 outbreak.	*Waterfall Descriptive*	Making a repository can save librarians time in managing scientific works, students can access it online, and library services can be done in real-time.
4	Study of Information Literacy for Co-Assistant Students of the Faculty of Medicine, Diponegoro University Using The Empowering Eight Model	Yanuarizka Mirazita, Yuli Rohmiyati (Mirazita & Rohmiyati, 2015).	the availability and ease of access to information will make the information unclear in the form of available information, the truth and validity of which are not clear	Qualitative method exploratory study.	The co-assistant students appropriately determine the findings, select relevant information, and the credibility of the sources of information used.
5	Information Literacy of Librarians in the Library of the Faculty of Engineering Ugm Using The Big 6. Model Development	Yudhistira. (Yudhistira, 2017).	Librarians must have special skills in terms of literacy, there is no measurement of the literacy ability index of librarians	Quan tentative descriptive method.	Based on the overall average score on information literacy of librarians at the UGM Faculty of Engineering Library based on the Big 6 model, the overall score obtained is 3.20.

Based on the literature review highlighted by the author, it can be concluded that research on the proposed title does not yet exist and needs to be done. Student research performance is an important

element in determining the success of higher education.

Empowering Eight

The Empowering Eight model is one of the models for measuring the level of information literacy (Raden Kania et al., 2020). The aim is to develop an information literacy model (Dorsa & Connors, 1979) that will be used for Southeast and South Asian countries. The created paradigm is termed Empowering Eight (E8) since it covers eight components of obtaining and using information.. Empowering 8 (Nashihuddin, 2015). According to this model using a problem-solving approach to resource-based-learning (Kania et al., 2020), information literacy consists of the ability to:

1. Identify the topic, target audience, formats, and sources.
2. Identify appropriate sources and information for the topic.
3. Collect and document pertinent material, including quotations.
4. Organizing and analyzing information logically, distinguishing between facts and views, and utilizing visual aids for comparison and contrast.
5. Writing, revising, and creating a bibliography.
6. Display or present the generated information.
7. Assess output using feedback from others.
8. Application of input, assessment, and experience gained for future activities; and the use of newly acquired knowledge for various situations (Prawita Khairi, 2020).

Repository

A repository is a place or space where something is stored (Rodliyah & Habib, 2019). The term repository is used to describe some form of data storage and digital collection. The repository is a central place where data can be stored or maintained, a specific place that is specifically used to store digital data, and a location where eprints are placed (Sutedjo, 2014). Repository also means a place where various files or databases are placed which are then used for distribution over a specific network. Stated that the repository aims to provide access to maximize its use, disclosure of information on institutional scientific works, collect content in a repository, and store and disseminate institutional assets, including unpublished gray literature (Siregar, 2013).
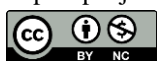
Student Research Performance

Student performance is measured based on ability in terms of preparing learning implementation plans and conducting classroom learning, then analyzed to determine the correlation between the two abilities, as well as knowing student responses to feedback from all participants (Suryana, 2018). One of the important factors in the Tridharma of Higher Education is helping to produce student research which is then published in the form of articles in scientific journals (Minister of Education and Culture of the Republic of Indonesia, 2021). Evaluation of research performance so that it affects national research policies and the livelihoods of many people, especially academics and researchers (Yaniasih, 2020)

Library

The library is an institution that opens access to its users to utilize its information resources to provide benefits to the lives of these users, both as problem solvers, learning, entertainment, and recreation as well as improving life skills, etc. (Nuraida et al., 2019). Stated that libraries, especially university libraries, began to provide digital services, namely by providing access to various sources of electronic information, both available inside the library and outside the library (Hasugian, 2011). According to the Random House Dictionary of the English Language, the library is a place, in the form of a room or building that contains books and other materials for reading, study, and reference. (Saleh & Komalasari, 2014).

2. RESEARCH METHODS

The data collection method used a questionnaire, with statistical analysis, a model for assessing student literacy skills with Empowering 8, which were a research method used to produce products and test the effectiveness of these products, with the Waterfall system development model, which consists of analysis, design, implementation, and testing. The waterfall model provides a sequential or sequential software lifeflow approach starting from the analysis, design, coding, testing, and support stages. (Rosa U.S., 2016) (Sommerville, 2010). The waterfall method is a sequential software development process, where technological progress is seen as a continuous flow through several phases, namely planning, modeling, implementation, and testing (Hidayanti et al., 2020)
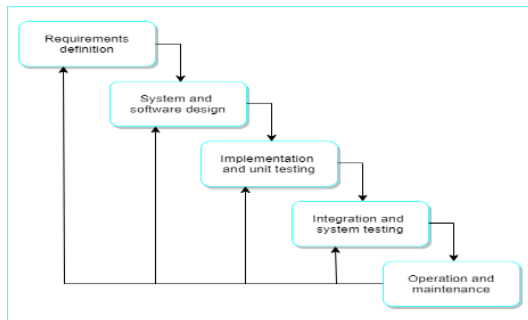
Figure 1. *The Waterfall Model* (Sommerville, 2011)

Picture of the waterfall model waterfall model, several stages in software development waterfall model, namely:

1. Analyze and define software requirements. The process of gathering requirements is carried out intensively in order to establish software requirements and determine what type of software is required by the user.
2. System and Software Design is a multi-step process that involves designing software programs, including data structures, architecture, interfaces, and coding techniques.
3. Generate program code and test it. The design must be converted to a software program. This stage produces a computer program based on the design created during the design stage.

4. Integration and System Testing (IST) examines software from a logical and functional perspective to ensure all components work properly.
5. Integration and System Testing (Integration System and Testing) makes sure that every component has been tested by looking at software from a functional and logical perspective. By doing this, mistakes are reduced and the intended output is guaranteed.
6. Assistance and Upkeep
7. The development process, beginning with specification analysis, can be repeated in the support or maintenance phase for modifications to already-existing software, but not for the creation of new software.
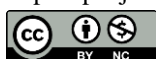
3. RESULTS AND DISCUSSION

A. Empowering Eight Model

The Empowering Eight Model used, which here eight indicators that are applied in measuring information literacy skills, especially digital literacy for UNBAJA students based on interviews with students and supervisors, questionnaires, and literature studies, the results obtained are shown in Table 2. Below.

Table 2. Indicators of Empowering Eight Banten Jaya University Students

No	Stage	Indicator	Achievement
1	Identification	Student's ability to translate/identify existing research problems	• Determining Research Title • Define Problem Identification
2	Exploration of sources and information appropriate to the topic	Students have a variety of sources of information that can be accessed to find information that is by the research topic they are doing	• Able to find accurate, accountable, and readable sources of information • Have a good variety of sources of information
3	Select and record relevant information, and collect appropriate quotations	The ability to select, add, and subtract information through the repository data sources according to the research only	• Voting via online and offline OPAC
4	Organization	Ability to use reference managers to facilitate thesis writing/research/Students can organize all information acquisition into research templates adopted by each faculty	• Using Reference Manager (Mendeley, Zotero, Endnote)
5	Creation	Students can create new research that is complete, accurate, and useful for their knowledge	• Finding solutions to research problems
6	Presentation	Students can present their research results in front of the presentation appraisal team (proposal seminar)	• Proposal Seminar
7	Evaluation	Students can get a good assessment from the team of examiners/panelists in the thesis courtroom	• Thesis Session
8	Application/Implementing	Students can apply the results of their research to solve the problems they face	• Application of Research Results

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B. Library Repository

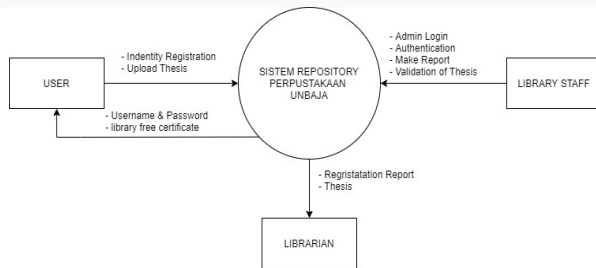The results of the analysis show a data flow diagram as below:

Figure 2. Context Diagram

The literacy level of students at FILKOM, FKIP, and FT is quite good, the repository was built using the open-source Setiadi Walanae by adding some template adjustments and adapting to the needs and SOPs of the library. The following is the result of the implementation used in the library:
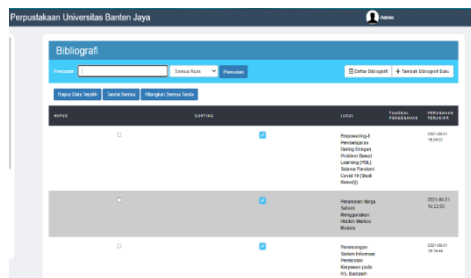

Figure 3. Bibliography Available in the Library

Based on Figure 2. students can search for supporting sources of scientific work according to the available categories in the form of journals that have been published by lecturers, books that match the desired theme, and know the titles of student scientific works that have been published. Students can search for bibliographic sources based on categories, titles, or titles that can support writing scientific publications.
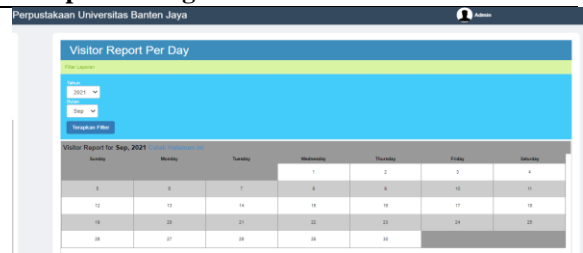

Figure 4. Visitor Report

Visitors who access the library can be seen in Figure 3, where we can find out the number of examiners every day. The number of visitors increases when students work on PKN, KKM, proposals, and thesis assignments.
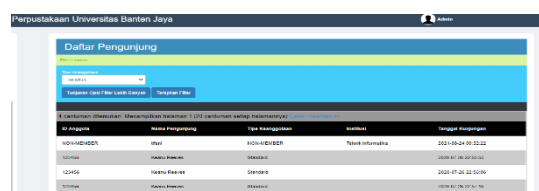

Figure 5. List of Library Visitors

The list of visitors who access the library can be seen based on the member ID, the name of the visitor, the membership type, and the date of visit. So that the librarian can see the library visitors who most often access the website.
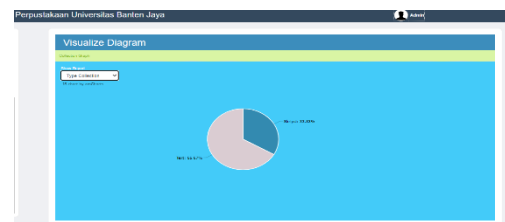

Figure 6. Visualize Diagram

Besides being able to see the number and list of visitors, the librarian can also see a diagram visualization of the types of collections in the library. Figure 5. will be very useful for the addition of literacy needed to improve student publications in the future.

Table 3. Student Research Performance Indicators

No	Stages	Indicator	Performance
1	Introduction (Identification)	Student's ability to translate/identify existing research problems	• Determining Research Title • Define Problem Identification
2	Theoretical Description (Exploration of sources and information according to the topic)	Students have a variety of sources of information that can be accessed to find information that is by the research topic they are doing	• Able to find accurate, accountable, and readable sources of information • Have a good variety of sources of information
3	Thinking Framework (Select and record relevant information, and collect appropriate quotations)	The ability to select, add, and subtract information through the repository data sources according to the research only	• Voting via online and offline OPAC
4	Organization (Doing research and Compiling Thesis by existing guidelines)	Ability to use reference managers to facilitate thesis writing/research/Students can organize all information acquisition into research templates adopted by each faculty	• Utilization of Thesis/Final Project Guidebook Using Reference Manager (Mendeley, Zotero, Endnote)
5	Creation (finding problem-solving and creating novelty according to the field of science)	Students can create new research that is complete, accurate, and useful for their knowledge	• Finding solutions to research problems
6	Presentation (delivering research results in the form of a Thesis Session)	Students can present their research results in front of the presentation appraisal team (proposal seminar)	• Students can defend their research proposals Seminar Proposals
7	Assessment (receiving assessments from Advisors and examiners)	Students can get a good assessment from the team of examiners/panelists in the thesis siding room	• Students can account for their research at the Thesis Session
8	Application (make improvements and validation of research from examiners, supervisors, and academics of respective Faculties)	Students can apply the results of their research to solve the problems they face	• Students can apply their research results in the world of work

In the figure below, the red color represents the number of published student research, while the blue color represents the results of unpublished student research. This data had been obtained from 64 students of the Informatics Engineering Study Program at the Faculty of Computer Science, Banten Jaya University who had taken the Research Methods course and were currently writing a thesis, who had filled out the questionnaire completely. Figure 7 shows the conditions before using the repository system. The results obtained were 51.6% of student research that had been published and 48.4% of student research that had not been published. Figure 8 shows the results obtained after implementing information literacy and e-repository. This figure showed an increase in the number of research publications by 68.8% of published student research and a decrease in the number of unpublished student research by 31.3%.

With the implementation of the information literacy and e-repository program, there was an increase in student research publications by 17.2%.
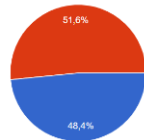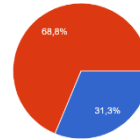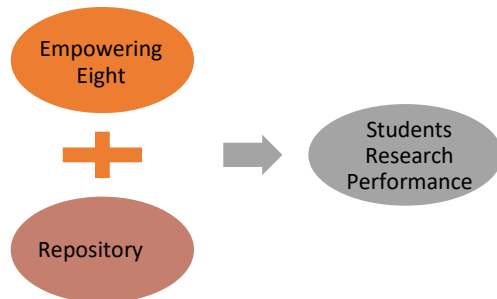
Figure 7. Pre Test

Figure 8. Post Test

Figure 9. Student Research Performance Improvement Model

Student information literacy, especially adequate digital literacy, and the existence of a library research information repository (repository)

Student information literacy, especially adequate digital literacy, and the existence of a library research information repository (repository) both online and offline can improve student research performance because students will be able to write if they read a lot, and for research, especially material Good reading is research reading material that has been properly processed and organized by applicable rules and regulations, so that it can be easily accessed and used to develop student research.

4. Conclusion

A good level of literacy is the basic capital in solving student problems while doing their research, it is necessary to have a sustainable Information Literacy program. Integrated student research in the Research Methods course to increase student research performance in accessing the repository that has been built. With the implementation of the information literacy and e-repository program, there was an increase in student research publications by 17.2%.

5. Future Work

Further researchers in literacy do not only use empowering eight but can use different methods. Evaluation various of student research

Based on the indicators above, it can be seen that measuring student literacy using the Empowering Eight
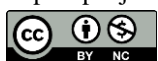
Model through the Repository can improve student research performance which can be seen in the final results of Thesis / Final Project / Research Results of Unbaja Students. Briefly, it can be illustrated in Figure 6. Below

both online and offline can improve student research performance because students will be able to write if they read a lot, and for research, especially material Good reading is research reading material that has been properly processed and organized by applicable rules and regulations, so that it can be easily accessed and used to develop student research.

results can use different approaches, so the results will be different.

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